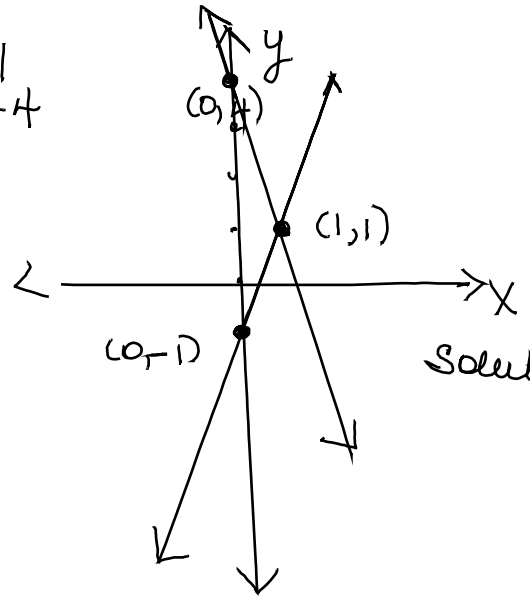
Practice Test One - Math 0350

1) $y = 2x - 1$
$y = -3x + 4$

$y = -3x + 4$

$(0, 4)$

$m = -\frac{3}{1}$ ↓ 3 → 1



$y = 2x - 1$
$y = mx + b$

$m = \frac{2}{1}$ ↑ 2 → 1 $(0, -1)$

Solution $(1, 1)$

② $2x + y = 4 \Rightarrow$
$3x - 2y = 6$

$2x + y = 4$
$-2x \quad -2x$
$y = -2x + 4$

$(3x) - 2(-2x + 4) = 6$

$3x + 4x - 8 = 6$
$7x - 8 = 6$
$+8 \quad +8$
$\frac{7x}{7} = \frac{14}{7}$

$x = 2$

$y = -2(2) + 4$
$= -4 + 4$
$y = 0$

$(2, 0)$ ← solution

③ $4x - 5y = -7 \rightarrow 3(4x - 5y) = 3(-7) \Rightarrow 12x - 15y = -21$
$6x + 3y = 21 \rightarrow 5(6x + 3y) = 5(21) \Rightarrow 30x + 15y = 105$

Eliminate y

$4(2) - 5y = -7$
$8 - 5y = -7$
$-8 \quad -8$

$\frac{-5y}{-5} = \frac{-15}{-5}$ ⇒ $y = 3$ $(2, 3)$

$\frac{42x}{42} = \frac{84}{42}$

$x = 2$

④ $x - 3y = 6 \Rightarrow -2(x-3y) = -2(6)$

$2x - 6y = 12 \rightarrow -2x + 6y = -12$

$2x - 6y = 12$

$0 = 0 \leftarrow$

infinitely many solutions

⑤ $y = 5x - 1$

$5x - y = 3 \Rightarrow 5x - (5x-1) = 3$ no solution

$5x - 5x + 1 = 3$

$1 = 3$ ✗

⑥ Let A = no. of adult tickets → 47

C = no. of children's tickets → 80

$A + C = 127$

$-C \quad -C$

$A = 127 - C$

$A = 127 - 80$

$A = 47$ tickets

$2A + 1.50C = 214$

$2(127 - C) + 1.50C = 214$

$254 - 2C + 1.50C = 214$

$254 - .50C = 214$

$-254 \qquad -254$

$-.50C = -40$

$\frac{-.50C}{-.50} = \frac{-40}{-.50}$

$C = 80$ tickets

⑦ x = 1st complementary angle

y = 2nd " "

$x + y = 90°$ $\quad x = y - 36$ $\quad x = 63° - 36°$

$x = 27°$

$y - 36 + y = 90°$

$2y - 36 = 90$

$+36 \quad 36$

$2y = 126$

$\frac{2y}{2} = \frac{126}{2}$

$y = 63°$

⑧ $(-1,2)$ $m=3$ $y=mx+b$

$P(x_1,y_1)$

$\rightarrow y-y_1=m(x-x_1)$

$y-2=3(x-(-1))$

$y-2=3(x+1)$

$y-2=3x+3$

$+2 \quad +2$

$y=3x+5$

$f(x)=3x+5$

⑨ $P_1 \quad P_2$

$(4,-1) \quad (-2,5)$

$$m=\frac{y_2-y_1}{x_2-x_1}=\frac{5-(-1)}{-2-4}=\frac{5+1}{-6}=\frac{6}{-6}=-1$$

$y-(-1)=-1(x-4)$

$y+1=-x+4$

$-1 \quad -1$

$y=-x+3 \Rightarrow f(x)=-x+3$

⑩ $(1,-1)$ $\perp$ $6y+2x=2$ ←

$-2x \quad -2x$

$\frac{6y}{6}=\frac{-2x}{6}+\frac{2}{6}$

$y=-\frac{1}{3}x+\frac{1}{3}$ $m=-\frac{1}{3}$

$m_\perp=3$

$y-y_1=m(x-x_1)$

$y-(-1)=3(x-1)$

$y+1=3x-3$

$-1 \quad -1$

$y=3x-4 \Rightarrow f(x)=3x-4$

(11) $(-2,4)$ || $4y - 2x = 9$

$+2x \quad +2x$

$\frac{4y}{4} = \frac{2x}{4} + \frac{9}{4}$

$y = \frac{1}{2}x + 9/4 \quad m = 1/2$

$y - y_1 = m(x - x_1)$

$y - 4 = \frac{1}{2}(x - (-2))$

$y - 4 = \frac{1}{2}(x + 2)$

$y - 4 = \frac{1}{2}x + 1$

$+4 \quad +4$

$y = \frac{1}{2}x + 5 \Rightarrow$ $y = f(x) = 1/2x + 5$

(12) $m = 0 \quad (5,3)$ ↑

$y - y_1 = m(x - x_1)$

$y - 3 = 0(x - 5)$

$y - 3 = 0$

$+3 \quad +3$

$y = 3 \Rightarrow f(x) = 3$

(13) $y = kx$

$\rightarrow \frac{4}{12} = \frac{k(12)}{12}$

$\frac{1}{3} = k$

$y = \frac{1}{3}x$

(14) $y = \frac{k}{x} \Rightarrow y = \frac{15}{x}$

$5 \cdot 3 = \frac{k}{5} \cdot 5$

$15 = k$

(15) $g(x) = (x+1)^2 \leftarrow$

$f(x) = x^2 \quad (-1,1) \quad (1,1) \quad (0,0)$

$(-\infty, \infty) \leftarrow$ domain

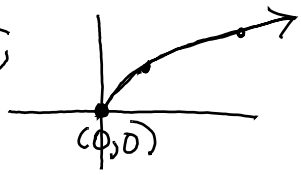
$(-2,1) \quad (0,1) \quad (-1,0)$

x	$(x+1)^2$
-2	$(-2+1)^2 = 1$
-1	0
0	$(0+1)^2 = 1$

Range $[1, \infty) \leftarrow$

(16) $f(x) = \sqrt{x-2} + 1$

$y = \sqrt{x}$

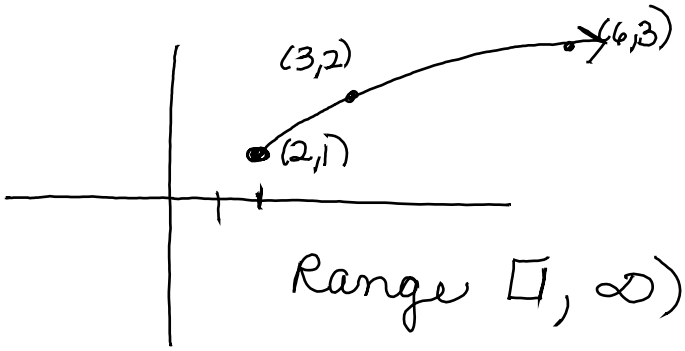


$x - 2 \geq 0$

$x \geq 2$

$x \geq 0$

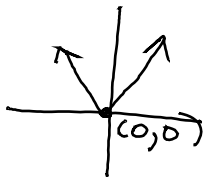
Domain $[2, \infty)$



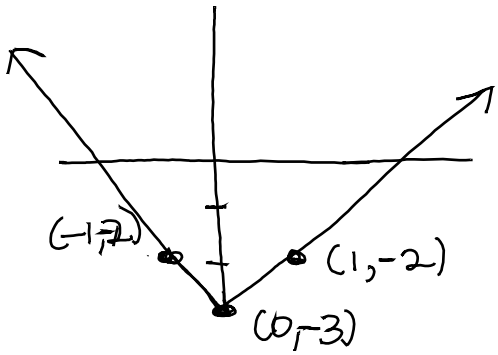
Range $[1, \infty)$

x	$\sqrt{x-2} + 1$	y
2	$\sqrt{2-2} + 1$	1
3	$\sqrt{3-2} + 1$	2
6	$\sqrt{6-2} + 1$	3

(17) $f(x) = |x| - 3$



x	$\lvert x \rvert - 3$	y
-1	$\lvert -1 \rvert - 3$	-2
0	$\lvert 0 \rvert - 3$	-3
1	$\lvert 1 \rvert - 3$	-2



(18) $f(2) = 1$

(19) $f(-5) = 2$ $f(4) = 2$

$x = -5, 4$

(20) Domain $(-\infty, \infty)$

(21) Range $[-1, \infty)$